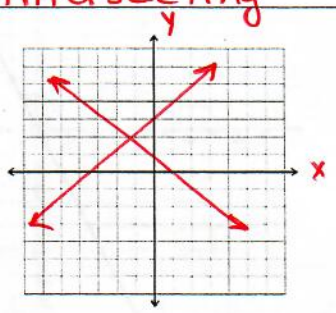
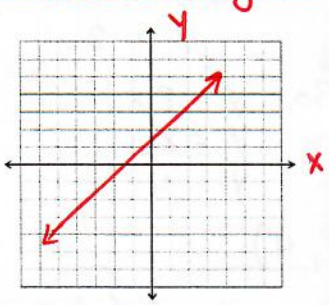
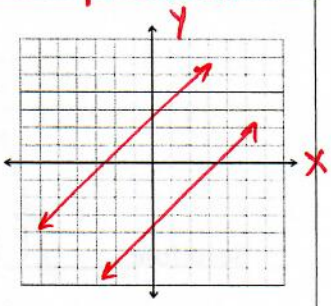
# ALG I - WS 6-1 SOLUTIONS

**Algebra I**
**WS 6-1 *Solving Systems by Graphing***

**Complete the table: (Notice that some parts have been completed for you.)**

| | intersecting | coinciding | parallel |
|---|---|---|---|
| **Graphic Solution** |  |  |  |
| **Number of Solutions** | 1 Solution | Infinite Solutions | 0 solutions |
| **Algebraic Solution** | (x, y) | Infinite | No solution |
| **Type of Solution** | consistent - independent | consistent dependent | inconsistent |

**Determine if the ordered pair is a solution to the system.**

x y
1. (3, 3);

$$\begin{cases} x + 2y = 9 \\ 4x - y = 15 \end{cases}$$

① $x + 2y = 9$
$3 + 2(3) = 9$
$3 + 6 = 9$
$9 = 9$ ✓
True

② $4x - y = 15$
$4(3) - 3 = 15$
$12 - 3 = 15$
$9 = 15$
False

(3, 3) is NOT a solution to the system.

x y
2. (1, −2)

$$\begin{cases} 2x - 3y = 8 \\ 3x + 2y = -1 \end{cases}$$

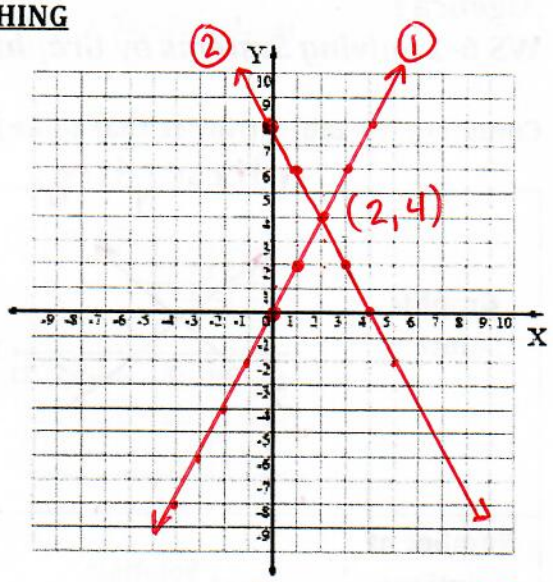
① $2x - 3y = 8$
$2(1) - 3(-2) = 8$
$2 + 6 = 8$
$8 = 8$
TRUE

② $3x + 2y = -1$
$3(1) + 2(-2) = -1$
$3 - 4 = -1$
$-1 = -1$
TRUE

(1, -2) is a solution to the system.

**SOLVE EACH SYSTEM OF EQUATIONS BY GRAPHING**

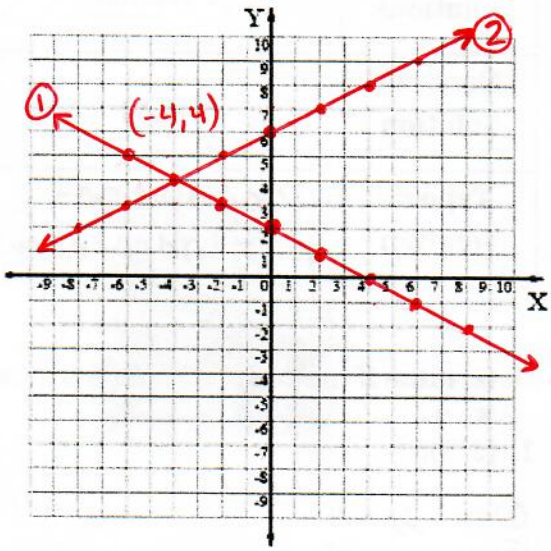
3. ① $y = 2x$ ; $m = 2$; $b = 0$
② $y = -2x + 8$ ; $m = -2$, $b = 8$




Solution: (2, 4)

Type of system: consistent / indep

4. ① $y = -\frac{1}{2}x + 2$ ; $m = \frac{-1}{2}$; $b = 2$
② $y = \frac{1}{2}x + 6$ ; $m = \frac{1}{2}$; $b = 6$




Solution: (-4, 4)

Type of system: consistent / indep.

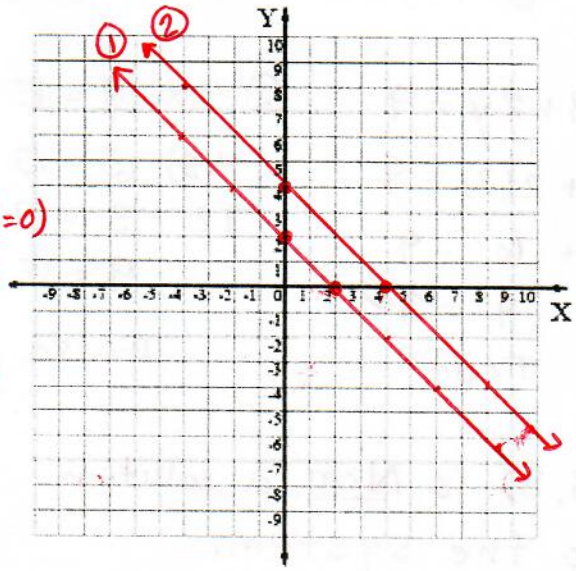
5. ① $2x + 2y = 4$
② $3x + 3y = 12$

① $2x + 2y = 4$

| x-int (y=0) | y-int (x=0) |
|---|---|
| $2x = 4$ | $2y = 4$ |
| $x = 2$ | $y = 2$ |
| (2, 0) | (0, 2) |

② $3x + 3y = 12$

| x-int (y=0) | y-int (x=0) |
|---|---|
| $3x = 12$ | $3y = 12$ |
| $x = 4$ | $y = 4$ |
| (4, 0) | (0, 4) |




Solution: no solution

Type of system: inconsistent

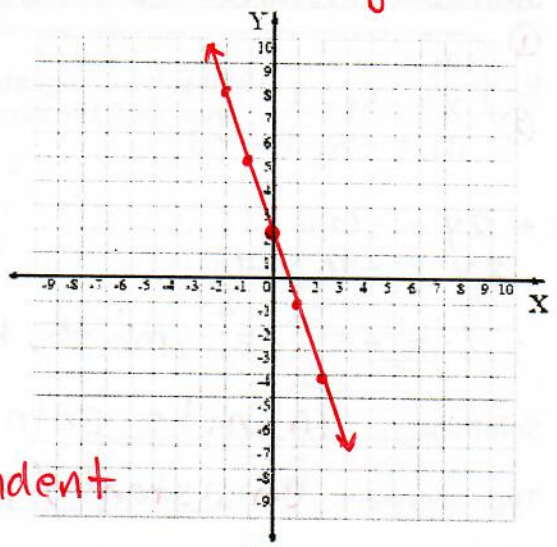
**SOLVE EACH SYSTEM OF EQUATIONS BY GRAPHING**

coinciding lines

6. $\begin{cases} y = -3x + 2 \\ 12x + 4y = 8 \end{cases}$ $m = -3$ ; $b = 2$

$\frac{4y}{4} = \frac{-12x}{4} + \frac{8}{4}$

$y = -3x + 2$ $m = -3$; $b = 2$

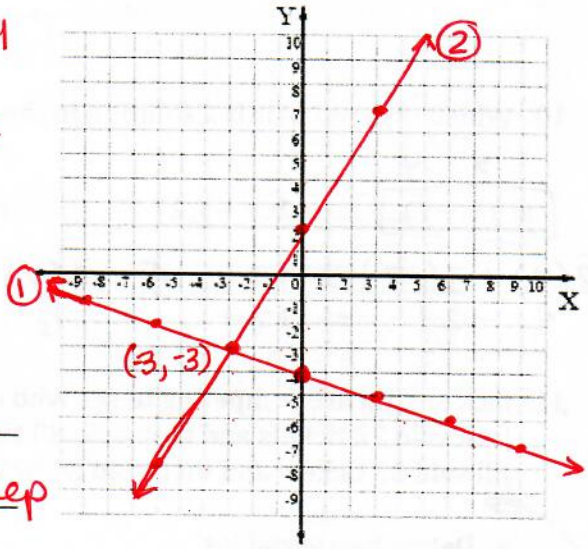


Solution: infinite solns

Type of system: consistent / dependent

7. ① $y = -\frac{1}{3}x - 4$ $m = \frac{-1}{3}$ ; $b = -4$

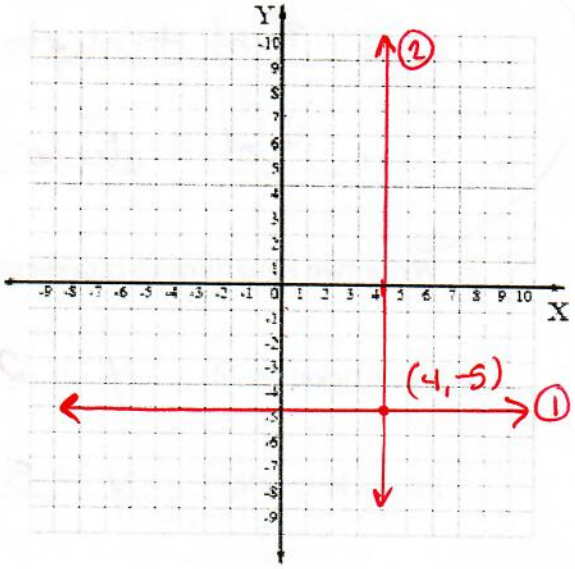
② $y = \frac{5}{3}x + 2$ $m = \frac{5}{3}$ ; $b = 2$




Solution: (-3, -3)

Type of system: consistent / indep

8. ① $\begin{cases} y = -5 \\ x = 4 \end{cases}$ ②




Solution: (4, 5)

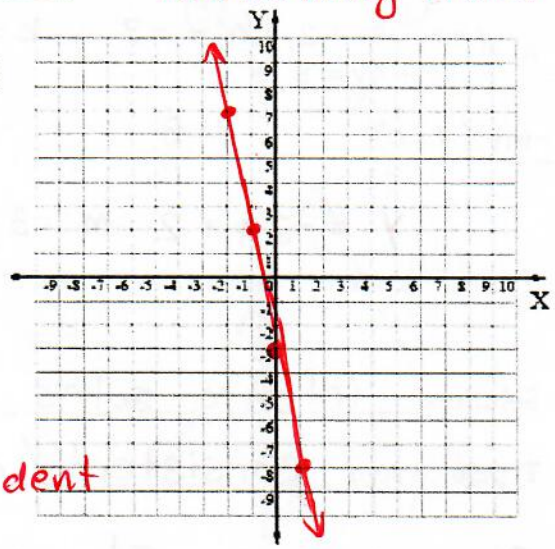
Type of system: consistent / indep.

**SOLVE EACH SYSTEM OF EQUATIONS BY GRAPHING**

coinciding lines

① 9. $\begin{cases} 10x + 2y = -6 \\ y = -5x - 3 \end{cases}$ (hint solve 1st equation for y)

② $m = -5;\ b = -3$




① $10x + 2y = -6$

$\frac{2y}{2} = \frac{-10x}{2} - \frac{6}{2}$

$y = -5x - 3$ $\quad m = -5;\ b = -3$

Solution: infinite solns

Type of system: consistent / dependent

10. Which ordered pair is a solution to the system? $\begin{cases} 2x + 3y = -17 \\ 3x + 2y = -8 \end{cases}$

x y

a. $(2, -7)$ b. $(-4, 2)$ c. $(-2, -1)$ d. $(-\frac{4}{3}, -2)$

① $2(2) + 3(-7) = -17$

$4 - 21 = -17$

$-17 = -17$

② $3(2) + 2(-7) = -8$

$6 - 14 = -8$

$-8 = -8$

11. Jack and Jill are competing to see who can sell the most tickets to a dance.
Jack sold 22 tickets and then sold 30 tickets per day after that.
Jill sold 53 tickets and then sold 20 tickets per day after that.

a. Define two variables.

Let x = # of days after original tickets sold

y = total # of tickets sold

b. Write two equations to represent the number of tickets each person sold.

Jack's tickets sold: $y = 22 + 30x$ OR $y = 30x + 22$

Jill's tickets sold: $y = 53 + 20x$ OR $y = 20x + 53$